WHAT IS CLAIMED IS:

1. A method to start a combined unit gas turbine and electrical unit having a static start drive comprising:

a. applying a variable frequency voltage from the static start drive to a winding of the generator to accelerate the combined unit to a turbine self-sustaining speed;

b. accelerating the combined unit beyond the self-sustaining speed by applying torque generated by the turbine, and

c. as the combined unit accelerates to a synchronous speed, applying a braking torque from the static start drive to steady the combined unit at the synchronous speed.

2. A method as in claim 1 wherein the static start drive is a thyristor frequency convertor.

3. A method as in claim 1 wherein step (c) further comprises comparing an actual rotational speed of the combined unit to a synchronous speed reference value and, based on the comparison, selecting the braking torque applied by the static start drive.

4. A method as in claim 1 further comprising connecting the generator to a balanced power system after the combined unit reaches the synchronous speed.

5. A method as in claim 1 further comprising braking the acceleration of the combined unit by

adjusting the turbine torque output in conjunction with applying the braking torque.

6. A method as in claim 1 further comprising disconnecting the static start drive from the generator after step (c).

7. A method as in claim 1 wherein the static start drive is connectable to an auxiliary armature output as the winding of the generator.

8. A method as in claim 1 wherein the static start drive is powered by an auxiliary power system.

9. A method as in claim 1 further comprising applying an excitation supply to a rotor winding of the generator during steps (a) and (c).

10. A method to start a combined unit gas turbine and generator having a thyristor frequency convertor (TFC), said method comprising:

a. applying a starting variable frequency voltage from the TFC to a winding of the generator to accelerate the combined unit to a turbine self-sustaining speed, wherein the starting variable frequency voltage is selected by the TFC based on a comparison of an actual rotational speed of the combined unit and a self-sustaining speed reference value;

b. accelerating the combined unit beyond the self-sustaining speed reference value by applying torque generated by the turbine;

c. during step (b) and as the combined unit accelerates to a synchronous speed, minimizing torque applied by the TFC and generator and

d. after step (b) and as the combined unit towards the synchronous speed, applying a braking torque from the TFC to steady the combined unit at the synchronous speed, wherein the braking torque value is selected based on a comparison of the actual rotational speed of the combined unit and the synchronous speed reference value.

11. A method as in claim 10 further comprising connecting the generator to a balanced power system after the combined unit reaches the synchronous speed.

12. A method as in claim 10 further comprising braking the acceleration of the combined unit by adjusting the turbine torque output in conjunction with applying the braking torque.

13. A method as in claim 10 further comprising disconnecting the static start drive from the generator after step (c).

14. A method as in claim 10 wherein the static start drive is connectable to an auxiliary armature output as the winding of the generator.

15. A method as in claim 10 wherein the static start drive is powered by an auxiliary power system.

16. A method as in claim 10 further comprising applying an excitation supply to a rotor winding of the generator during steps (a) and (d).

17. An apparatus to start a combined unit gas turbine and generator unit comprising:

an auxiliary winding of the generator having an auxiliary armature output;

a thyristor frequency convertor (TFC) connectable to the auxiliary armature output and further comprising a TFC controller, wherein said TFC generates a variable frequency voltage determined by said TFC controller;

a turbine regulator controlling gas turbine power output;

a synchronizer sensing a load voltage frequency of a power system load to which the generator is connectable and a supply voltage frequency output by the generator, and generating control commands issued to the turbine regulator and TFC to cause the regulator and TFC to adjust a speed of the gas turbine and generator unit.

18. An apparatus as in claim 17 wherein said synchronizer selects a speed reference value to be applied to the TFC and the TFC controller determines the variable frequency voltage appropriate to accelerate or decelerate the gas turbine and generator unit to the speed reference value.

19. An apparatus as in claim 18 wherein the speed reference value is a synchronous speed reference value corresponding to the load voltage frequency.

20. An apparatus as in claim 17 wherein the TFC applies the variable frequency voltage as the turbine regulator is controlling the turbine power output.